RESEARCH PROBLEM STATEMENT #RW-505

I – Problem Title
A lack of guidelines and specifications for the use of GPS RTNs by the Department.

II – Research Problem Statement
No guidelines and specifications exist to assure the quality of data produced by GPS RTNs meet the Department's positioning requirements.

III – Objective
Develop guidelines and specifications for GPS RTNs that will meet the Department's positioning requirements in four operational areas: Surveying, Machine Control, Position Monitoring, and Asset Management.

IV – Background
Public and private sector entities including other countries and US states, local agencies, the US Coast Guard, the National Science Foundation, the US Geological Survey, the California Spatial Reference Center, the Southern California Integrated GPS Network, and private vendors are developing and implementing GPS RTNs. GPS RTNs allow for continuous access to differential GPS correction signals, allowing equipment utilizing GPS to produce accurate products more quickly with less resources. These products include topographic maps, utility locations, construction staking, data to monitor the deformation of bridges and landslides, machine guidance, and the data to inventory assets. The readily available correction signal also provides additional cost savings and time reduction by eliminating the use of a conventional GPS base station.

This research project primarily supports the Department's goal of "Performance" by enabling many users to easily and accurately locate positions and relate spatial data to manage transportation system improvements.

V – Statement of Urgency and Benefits
The earliest production of guidelines and specifications for the use of GPS RTNs will enable the Department to utilize these systems to produce products to help improve mobility across California in a safer, cost reducing and time saving manner.

VI – Related Research
* A MASTER PLAN for a MODERN CALIFORNIA GEODETIC CONTROL NETWORK *Approved By: CSRC Coordinating Council – October 18, 2002*
Approved By: National Geodetic Survey – March 12, 2003

VII – Deployment Potential
Any Caltrans employee who has the need to locate positions or establish points, of a high or low accuracy, could benefit from this research. The GPS RTNs are proliferating around the State and new guidelines and specifications will accelerate the deployment of this technology.